

# *Agenda*

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## **11<sup>th</sup> Electrochemical Power Sources R&D Symposium July 13 – 16, 2009 Baltimore, MD**

**Monday, July 13, 2009**

9:00 AM      **Registration**

1:00 PM      **Opening Remarks**

### **Organization and Electrochemical Power Source Development Overviews**

#### **Navy**

1:15 PM      Dr. Michele Anderson, ONR  
1:45 PM      Dr. Patricia Smith, NSW, Carderock Division  
2:10 PM      Bill Johnson, NAVAIR  
2:35 PM      Joseph Fontaine, NUWC

3:00 PM      **Break**

#### **Army**

3:25 PM      Dr. Terrill Atwater, CERDEC  
3:50 PM      Dr. Sol Gilman, ARL

#### **Air Force**

4:15 PM      Dr. John Erbacher or Rodrigues

#### **NASA**

4:40 PM      Michelle Manzo and Concha Reid, NASA Glenn Research Center

#### **DOE**

5:05 PM      Dr. James Barnes

5:30 PM      **Adjourn**

6:30 PM      **Reception**

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Tuesday, July 14, 2009

- 8:00 AM      **Registration**
- 8:25 AM      **Opening Remarks**
- 8:30 AM      **Preparation and Properties of Lithium Cobalt Phosphate for Li-ion Batteries**  
J.L. Allen, J. Wolfenstine, T.R. Jow, ARL
- 8:55 AM      **High Power Window Shifted Li-ion Chemistries and Cells Utilizing 4.7 V Positive Electrodes**  
Glen Amatucci, Rutgers University
- 9:20 AM      **Effect Of Synthetic Method On The Electrochemical Properties Of Lithium Manganese-Nickel Spinel**  
Boris Ravdel and Frank Puglia, Lithion
- 9:45 AM      **Thermally Stable Lithium Ion Aircraft Batteries**  
Frank Puglia, Lithion
- 10:10 AM     **Break**
- 10:30 AM     **Development of Lithium Polymer Aircraft Batteries for F/A-18 and AH-1W**  
Mark Hurley, NAVAIR
- 10:55 AM     **Superior High Energy Density and High Rate Rechargeable Lithium ion Battery for Army Applications**  
J. Fan, R. Spotnitz American Lithium Energy Corp, G. Au, E. Plichta, US Army, CERDEC
- 11:20 AM     **Development of Prismatic Li-Ion Battery for Unmanned Aircraft**  
Teymour Guseynov, Marshall Chewning, Paul T. Twigg, Kamen Nechev, Saft America  
Bill Johnson and Mark Hurley, NAVAIR
- 11:45 AM     **Saft SuperPhosphate**  
Bridget Deveney, Sarah Rickman, Kamen Nechev, Saft America, Richard Jow, ARL
- 12:05 PM     **Lunch**
- 1:30 PM      **Advanced Nano-Lithium Titanate based Batteries for Military Application**  
John Shelburne, Veselin Manev, Brad Hanauer and Steve Cochran. Altairnano
- 1:55 PM      **Lithium-ion for High Power Airborne Applications**  
Joseph P. Fellner
- 2:20 PM      **Bipolar Lithium-ion R&D Experiments**  
John K. Erbacher
- 2:45 PM      **Low-Dimensional Fast Ion Conductor Solid-State Electrolyte for Rechargeable Lithium Batteries**  
Lawrence Scanlon or Joseph P. Fellner
- 3:10 PM      **Break**
- 3:30 PM      **A Study on Advanced Lithium-Based Battery Cell Chemistries to Enhance Lunar Exploration Missions**  
Concha Reid. NASA Glenn Research Center
- 3:55 PM      **Mechanical Degradation of Polymer Separators**  
Corey T. Love, NRL
- 4:20 PM      **Application of Lithium Ion and Lithium Polymer Batteries to Navy Aircraft Application to Achieve Safety and Affordability.**  
Bill Johnson, NAVAIR
- 4:45 PM      **Structural 3D Lithium Ion Batteries: Lessons Learned**  
Aron Newman and Christopher Lang, Physical Sciences, Inc.
- 5:10 PM      **Adjourn**

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Wednesday, July 15, 2009

- 8:00 AM      **Registration**
- 8:25 AM      **Opening Remarks**
- 8:30 AM      **Overview of Navy Lithium Battery Safety Program and A Review of Recent Incidents, Impacts of Platform Safety Assessments and the Implications for Technology Readiness Demonstrations, User Operational Evaluation Systems and Transitions to the Fleet**  
Clinton Winchester (NSWC), Julie Banner(NSWC), Mark Tisher (NSWC), Chris Batchelor (NOSSA), Dave Cherry (NAVSEA05Z) and Michelle Anderson (ONR)
- 8:55 AM      **Self-limiting electroless deposition en route to multifunctional electrode nano-architectures for electrochemical capacitors and metal-air batteries**  
Jeffrey Long, Megan Sassin, Anne Fischer, Christopher Chervin, Jennifer Dysart, Justin Lytle, Jean Wallace, Katherine Pettigrew and Debra Rolison, NRL, Azzam Mansour, NSWC Carderock
- 9:20 AM      **XAS of Nanoscale MnO<sub>x</sub> and FeO<sub>x</sub> Deposits Incorporated in Carbon Nanofoam**  
Azzam N. Mansour, NSWCCD
- 9:45 AM      **Low Cost Activated Carbons from Lignocellulosis Biomass**  
S. M. Lipka, C. R. Swartz, I. Kunadian and R. Gonzalez (University of Kentucky, Center for Applied Energy Research, Lexington, KY) and J. Jagiello (Micromeritics, Norcross, GA)
- 10:10 AM     **Break**
- 10:30 AM     **Hydrogen Generation from Waste Antifreeze via the BioForming Process**  
Bob Rozmiarek, Virent Energy Systems, Inc
- 10:55 AM     **SOFC Anodes for Operation on Hydrocarbon Fuels**  
Ray Gorte, Guntar Kim, Jusik Kim, J.M. Vohs, University of Pennsylvania, J.T.S. Irvine, St. Andrews University
- 11:20 AM     **Development and characterization of porous silicon based methanol-nitric fuel cell prototype systems for portable military applications**  
Tsali Cross, J.J.Kingsley, Derek Reiman, and Chris D'coutho, Neah Power Systems, Inc. Bothell, WA
- 11:45 PM     **Lunch**
- 1:30 PM      **Power Dense Solid Oxide Fuel Cell Units for Mobile Applications**  
Dr. Joseph Fellner
- 1:55 PM      **The Status of Direct Methanol Fuel Cells**  
Deryn Chu, Rongzhong Jiang, Scott Feldman, Joseph Kowal and D. Schimmel, ARL
- 2:20 PM      **Power vs. Energy, a case study of the effect of cathode thickness**  
Terrill Atwater, CERDEC
- 2:45 PM      **Li/MnO<sub>2</sub>-CF<sub>x</sub> Hybrid Chemistry Development**  
Ron Wang, UltraLife
- 3:10 PM      **Break**
- 3:30 PM      **Advance Development of High Energy Solid Cathode Hybrid System**  
Dr. N.S. Raman    Saft
- 3:55 PM      **CF<sub>x</sub> synthesized using mechano-chemical Techniques**  
W.K. Behl and J. Read, ARL
- 4:20 PM      **Li CF<sub>x</sub> Portable Power Advances**  
William Bushong, Ray-O-Vac
- 4:45 PM      **Lithium Carbon Mono-fluoride Batteries Designed for BA-5590/BA-5390 Applications**  
Gregg Bruce, Eagle Picher
- 5:10 PM      **Adjourn**

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Thursday, July 16, 2009

- 8:00 AM      **Registration**
- 8:25 AM      **Opening Remarks**
- 8:30 AM      **Electrochemical investigation of organic electrolytes containing Li<sub>2</sub>O or Li<sub>2</sub>O<sub>2</sub> oxides solubilized by boron based anion receptor**  
D. L. Foster, J. Read and W. K. Behl
- 8:55 AM      **Advanced Separator Materials for Lithium Primary and Secondary Batteries**  
Garrin Samii, Advanced Membranes Systems, Inc.
- 9:20 AM      **Lithium-Air System Development**  
Jamie Ostroha Ray-O-Vac
- 9:45 AM      **Primary Lithium Air Cells in Hybrid Systems**  
Arthur Doble, Ralph Roark, and Tom Dillon, Yardney Technical Products
- 10:10 AM     **Break**
- 10:30 AM     **Electrical and Mechanical Properties of Hot-Pressed Versus Sintered LiTi<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>**  
J. Wolfenstine, J. L. Allen, J. Sumner, U.S. Army Research Lab, J. Sakamoto, Michigan State University
- 10:55 AM     **Lithium Air Cell - the Challenges for the Chemistry with the Highest Energy Density**  
Chris Tran, Deyang Qu (Umass Boston) and Xiao-Qing Yang (Brookhaven National Lab)
- 11:20 AM     **The Development of a Li-Seawater Battery Battery**  
Charles J. Patrissi, Christian R. Schmacher, Steve Tucker, Joseph Fontaine, Delmas W. Atwater and Craig M. Deshenes, NUWC
- 11:45 AM     **High Power, Light Weight Zinc-Air Batteries**  
Dr. Jing Guo and Wayne Bennett, Eveready Battery Manufacturing, Inc.
- 12:10 PM     **Development and Study of Mediator-Enhanced Polymer Electrolyte Supercapacitors**  
Joe Zhou and Juanjuan Zhou, Miami University
- 12:35 PM     **Adjourn**